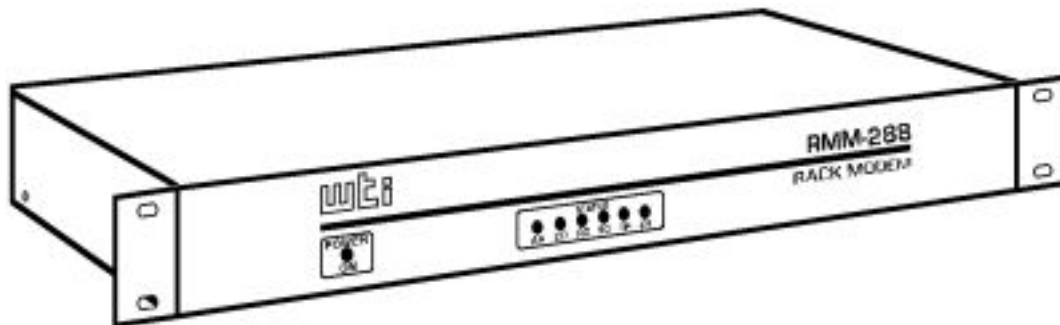


# RMM

## Rack Mount Data/Fax Modem



## User's Guide



5 Sterling, Irvine, California 92618-2517

U.S. and Canada: 1-800-854-7226

Phone: (949) 586-9950

Fax: (949) 583-9514

<http://www.wti.com>

---

## Table of Contents

- [1. Introduction](#)
- [2. Unit Description](#)
  - [2.1. Front Panel Indicators](#)
- [3. Operation](#)
- [4. Installation](#)
  - [4.1. 48 Volt DC Power Option](#)
  - [4.2. Dip Switch Settings](#)
- [5. Command Summary](#)

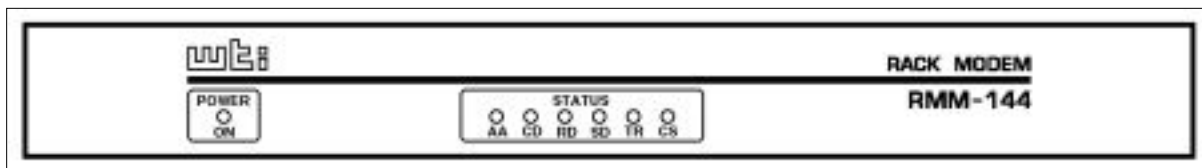
- [6. S-Registers](#)
- [7. Specifications](#)
- [8. Customer Service](#)

## List of Figures

- [1. Front Panel](#)
- [2. The Status Screen \(Defaults Shown\)](#)
- [3. 48 Volt DC Power Option](#)

# 1. Introduction

The RMM Rack Mount Data/Fax Modem is designed for applications that require a single "Industrial Strength" modem that easily installs in equipment bays. The unit requires only 1 rack space, thus eliminating the hassle of equipment trays and power bricks required for "Plastic Box" modems.



**Figure 1: Front Panel**

The heart of the RMM is the popular and highly reliable U.S. Robotics® Sportster® 28.8 modem card. The power supply is filtered, fused and surge protected for operation in harsh environments. The RMM is available in 115/230 (switchable) and 48 volt DC versions.

## Features

- Requires Only One 19 Inch Rack Unit
- High Speed ITU-T V.34+
- Filtered and Surge Protected Power Supply
- 115/220 Volt AC and 48 Volts DC Versions

# 2. Unit Description

## 2.1. Front Panel Indicators

LED	Status	Meaning
-----	--------	---------

AA (Auto Answer)	On	Answer mode only: Modem is answering a call and DIP Switch 5 is UP (Enable Auto Answer), or register S0 is set to 1 (Auto Answer, 1 Ring).
	Off	No activity, or modem is originating a call.
	Flash	Incoming call.
CD (Carrier Detect)	On	A valid data carrier signal has been received from a remote modem, and Dip Switch 6 is UP (Normal Carrier Detect). Modem is ready to transmit data. The CD Indicator will remain ON constantly if Dip Switch 6 is DOWN (Carrier Detect Override).
RD (Receive Data)	Flash	Modem is sending result codes or passing received data bits.
SD (Send Data)	Flash	Computer is sending data bits.
TR (Data Terminal Ready)	On	Modem is receiving DTR signal from computer. The TR indicator will only function when Dip Switch 1 is UP (Normal DTR). Remains ON constantly if Dip Switch 1 is DOWN (DTR Override).
CS (Clear to Send)	On	Hardware flow control is enabled (&H1, &H3), modem is waiting for low CTS signal.

### 3. Operation

The following commands can be used to display current configuration status and various help menus:

View Modem Setup:	<b>ATI4</b>
Basic Help Menu:	<b>AT\$</b>
Dial Command Help Menu:	<b>ATD\$</b>
Configuration Command Help Menu:	<b>AT&amp;\$</b>
List of S-Registers:	<b>ATS\$</b>
Reset Modem to Default Profile 0:	<b>ATZ3</b>

When the View Modem Setup command (**ATI4**) is invoked, the RMM will display a status screen as shown below.

```

B0  E1  F1  M1  Q0  V1  X1  Y0
BAUD=9600      PARITY=N  WORDLEN=8
DIAL=PULSE    ON HOOK

&A1  &B0  &C1  &D2  &G0  &H0  &I0  &K1
&M4  &N0  &P0  &R1  &S0  &T5  &Y1

S00=001  S01=000  S02=043  S03=013  S04=010  S05=008  S06=002
S07=060  S08=002  S09=006  S10=007  S11=070  S12=050  S13=000
S14=000  S15=000  S16=000  S17=000  S18=000  S19=000  S20=000
S21=010  S22=017  S23=019  S24=000  S25=005  S26=000  S27=000
S28=008  S29=020  S30=000  S31=000  S32=000  S33=000  S34=006
S35=000  S36=014  S37=000  S38=000  S44=015  S51=000

```

Figure 2: The Status Screen (Defaults Shown)

## 4. Installation

### 4.1. 48 Volt DC Power Option

The 48 Volt DC input is not polarity sensitive. Therefore, you can connect either positive or negative wires from your 48 volt power source to either input and the internal circuitry will adjust for the proper polarity.

**Input Range:** 40 - 60 Volts DC, 200 milliamps maximum.

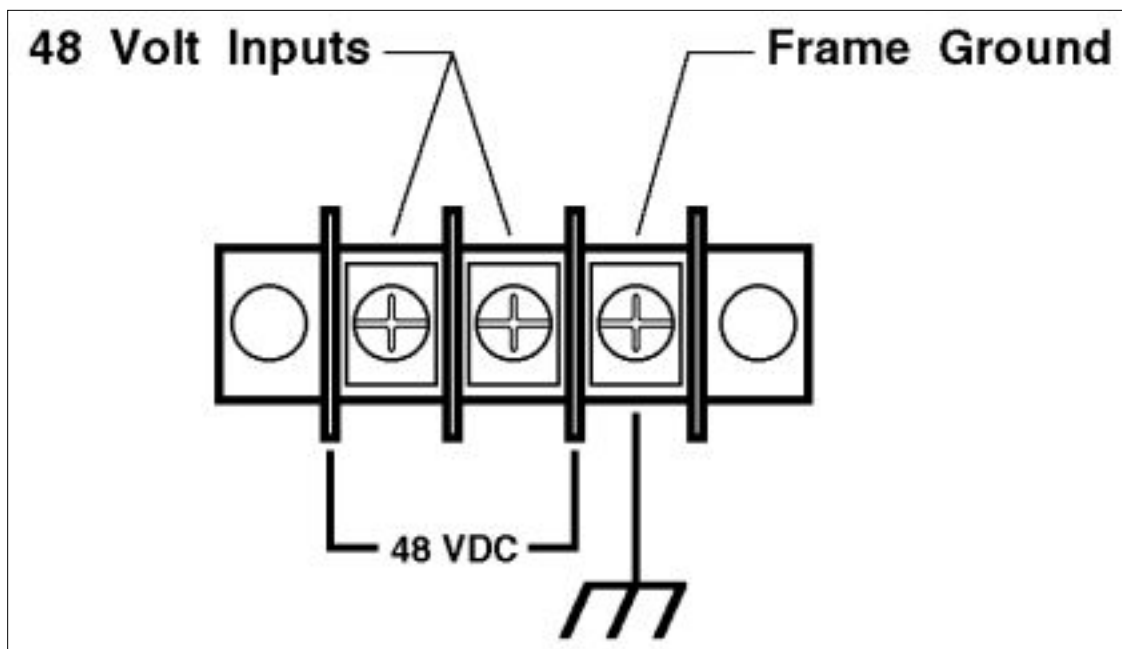


Figure 3: 48 Volt DC Power Option

## 4.2. Dip Switch Settings

Switch	Factory Setting	Function	
<b>1</b>		<b>Data Terminal Ready (DTR) Override</b>	
	<b>X</b>	UP	Normal DTR operations: Computer must provide DTR signal for modem to accept commands. Dropping DTR terminates call.
		DOWN	DTR Override: Modem ignores DTR
<b>2</b>		<b>Verbal/Numeric Result Codes</b>	
	<b>X</b>	UP	Verbal (Word) Results
		DOWN	Numeric Results
<b>3</b>		<b>Result Code Display</b>	
		UP	Suppress Result Codes
	<b>X</b>	DOWN	Display Result Codes
<b>4</b>		<b>Command Mode Local Echo Suppression</b>	
	<b>X</b>	UP	Enable Echo
		DOWN	Suppress Echo
<b>5</b>		<b>Auto Answer Suppression</b>	
	<b>X</b>	UP	Auto Answer On: Modem answers on first ring, or higher if specified in NVRAM
		DOWN	Auto Answer Off: Disable auto answer
<b>6</b>		<b>Carrier Detect (CD) Override</b>	
	<b>X</b>	UP	Normal: Modem sends CD signal when connecting with another modem, drops CD on disconnect
		DOWN	Override: CD always ON
<b>7</b>		<b>Power-On and ATZ Reset Software Defaults</b>	
		UP	User Defaults: Load Y or Y1 configuration from user-defined nonvolatile memory (NVRAM).
	<b>X</b>	DOWN	Factory Defaults; Load &F0 (Generic) template from read-only memory (ROM).
<b>8</b>		<b>AT Command Set Recognition</b>	

		UP	Dumb Mode: Disables command recognition
	<b>X</b>	DOWN	Smart Mode: Enables command recognition

## 5. Command Summary

- Type commands in either upper or lower case. Do not use a combination of upper *and* lower case characters.
- Use the Backspace key to delete errors. Note that the original AT command is stored in the modem buffer, and cannot be deleted.
- Some commands have numeric options. If these commands are invoked without a numeric option, the modem will assume option 0 (zero). For example, when the command **ATB** is invoked, the modem will assume command **ATB0** was intended.
- All commands begin with the AT prefix, and are invoked by pressing [Enter] (Carriage Return). The only exceptions are the **A/** command (Repeat previous command) and **+++** (Exit to on-line command mode).
- The maximum command length is 40 characters. This does not include the **AT** prefix, Carriage Returns, or spaces.

**Note:** Default values are marked with an asterisk. All defaults are based on the &F1-Hardware Flow Control Template loaded in NVRAM.

Command		Function/Options
\$		Displays basic command list (On-line Help Menu).
A		Manual Answer: goes off hook in answer mode. Pressing any key aborts the operation.
A/		Re-executes the last issued command. Used mainly to redial. Does not require the AT prefix or a Carriage Return.
Any Key		Aborts off-hook dial/answer operation and hangs up.
AT		Required prefix for all modem commands. Can also be used to test for the OK result code. Not required for the A/ command or +++ command.
Bn		U.S./ ITU-T answer sequence
	*	B0 ITU-T answer sequence
		B1 U.S. answer tone
Dn		Dials the specified phone number. Can also include the following command options:
		DL Re-dials last number dialed

	*	DP	Pulse (Rotary) Dial Mode
		DR	Originates call using answer (reverse) frequencies.
		DS $n$	Dials phone number string stored in NVRAM at position $n$ ( $n = 0-3$ ). Phone numbers are stored with the &Z $n=s$ command.
		DT	Tone Dial Mode
		D,	(Comma) Two Second Pause. Comma pause duration can be redefined via the S8 Register.
		D;	(Semicolon) Return to Command Mode after dialing.
		D"	Dials the letters that follow (in an alphabetic number).
		D!	(Exclamation Point) Flashes the switch hook.
		D/	Delays for 125 msec before proceeding with dial string.
		DW	Wait for second dial tone (X3 or higher). Linked to S6 Register.
		D@	Dials, waits for 5 seconds of silence after detecting ringbacks, and then continues (X2 or X4).
		D\$	Displays a list of dial commands.
<b>En</b>		Sets local echo. (Also controlled by DIP Switch 4).	
		E0	Echo Off
	*	E1	Modem displays keyboard commands.
<b>Fn</b>		Sets online local echo of transmitted data On/Off.	
		F0	Local echo ON. Modem sends a copy of data it sends to the remote system to your screen.
	*	F1	Local echo OFF. Receiving system may send a remote echo of data it receives.
<b>Hn</b>		Controls On/Off Hook	
		H0	Hangs up (goes on hook)
		H1	Goes off hook
<b>In</b>		Displays the following information:	
		I0	Four-digit product code
		I1	Results of ROM checksum
		I2	Results of RAM checksum
		I3	Product type
		I4	Current modem settings

	I5	Nonvolatile memory (NVRAM) settings
	I6	Link diagnostics
	I7	Product configuration
<b>Mn</b>	Operates Speaker	
	M0	Speaker always Off.
	* M1	Speaker On until connect.
	M2	Speaker always On.
	M3	Speaker On after dial, until connect.
<b>On</b>	Returns online	
	O0	Returns online.
	* O1	Returns online and retrains.
<b>P</b>	Sets pulse dial (for phone lines that don't support touch-tone dialing).	
<b>Qn</b>	Displays/suppresses result codes. Also controlled by DIP switch 3.	
	* Q0	Displays result codes.
	Q1	Quiet mode; no result codes.
	Q2	Displays result codes only in Originate mode. Cannot be stored in NVRAM.
<b>Sr.b=n</b>	Sets bit .b of register r to value n (0 = OFF or 1 = On)	
<b>Sr=n</b>	Sets register r to value n. See list of S-Register settings.	
<b>Sr?</b>	Displays contents of S-Register r.	
<b>T</b>	Sets tone dial.	
<b>Vn</b>	Displays verbal/numeric result codes. Also controlled by DIP switch 2	
	V0	Numeric codes.
	* V1	Verbal codes.

<b>Command</b>	<b>Function/Options</b>					
<b>Xn</b>	Sets result code displayed. The default is X4.					
		<b>Xn Setting</b>				
	<b>Result Codes</b>	<b>X0</b>	<b>X1</b>	<b>X2</b>	<b>X3</b>	<b>X4</b>
	0/OK	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>	<b>X</b>



1/CONNECT	X	X	X	X	X
2/RING	X	X	X	X	X
3/NO CARRIER	X	X	X	X	X
4/ERROR	X	X	X	X	X
5/CONNECT 1200		X	X	X	X
6/NO DIAL TONE			X		X
7/BUSY				X	X
8/NO ANSWER*				X	X
10/CONNECT 2400		X	X	X	X
13/CONNECT 9600		X	X	X	X
18/CONNECT 4800		X	X	X	X
20/CONNECT 7200		X	X	X	X
21/CONNECT 12000		X	X	X	X
25/CONNECT 14400		X	X	X	X
43/CONNECT 16800		X	X	X	X
85/CONNECT 19200		X	X	X	X
91/CONNECT 21600		X	X	X	X
99/CONNECT 24000		X	X	X	X
103/CONNECT 26400		X	X	X	X
107/CONNECT 28800		X	X	X	X
151/CONNECT 31200		X	X	X	X
155/CONNECT 33600		X	X	X	X
<b>Functions</b>					
Adaptive Dialing			X	X	X
Wait for 2nd Dial Tone (W)			X		X
Wait for Answer (@)				X	X
Fast Dial			X		X
* Requires @ in dial string; replaces NO CARRIER					

Command	Function/Options	
<i>Yn</i>	Selects Power-on/Reset default configuration.	
	*	Y0 Default is profile 0 setting in NVRAM.
		Y1 Default is profile 1 setting in NVRAM.
<i>Zn</i>	Resets modem based on current DIP Switch settings.	
		Z0 Resets modem to NVRAM profile selected by the Y command.
		Z1 Resets modem to NVRAM profile 0.
		Z2 Resets modem to NVRAM profile 1.
		Z3 Resets modem to factory default profile 0 (&F0).
		Z4 Resets modem to factory default profile 1 (&F1).
		Z5 Resets modem to factory default profile 2 (&F2).
&\$	Displays a list of ampersand (&) commands.	
&An	Enables/disables additional result code subsets (see <i>Xn</i> ).	
		&A0 ARQ result codes disabled.
		&A1 ARQ result codes enabled.
		&A2 V.32 modulation indicator added.
	*	&A3 Protocol indicators added - LAPM/MNP/NONE (error control) and V42BIS/MNP5 (data compression).
&Bn	Manages modem's serial port rate.	
		&B0 Variable, follows connection rate.
	*	&B1 Fixed Serial port rate.
		&B2 Fixed in ARQ mode, variable in non-ARQ mode.
&Cn	Controls Carrier Detect (CD) signal.	
		&C0 CD override
	*	&C1 Normal CD operations
&Dn	Controls Data Terminal Ready (DTR) operations. Also controlled by DIP Switch 1.	
		&D0 DTR override
		&D1 DTR toggle causes online Command Mode.

	*	&D2	Normal DTR operations
		&D3	Resets on receipt of DTR
<b>&amp;Fn</b>	Loads a read-only (non-programmable) factory configuration.		
		&F0	Generic Template
	*	&F1	Hardware flow control template
		&F2	Software flow control template
<b>&amp;Gn</b>	Sets Guard Tone		
	*	&G0	No guard tone (U.S.A. and Canada).
		&G1	550 Hz guard tone (some European countries); requires B0 setting.
		&G2	1800 Hz guard tone (U.K.); requires B0 setting.
<b>&amp;Hn</b>	Sets Transmit Data (TD) flow control.		
		&H0	Flow control disabled.
	*	&H1	Hardware flow control, Clear to Send (CTS).
		&H2	Software flow control, XON/XOFF.
		&H3	Hardware and Software flow control.
<b>&amp;In</b>	Sets Receive Data (RD) software flow control (see also &Rn).		
	*	&I0	Software flow control disabled.
		&I1	XON/XOFF signals to your modem and remote system.
		&I2	XON/XOFF signals to your modem only.
<b>&amp;Kn</b>	Enables/disables data compression.		
		&K0	Data compression disabled
	*	&K1	Auto enable/disable
		&K2	Data compression enabled
		&K3	MNP5 compression disabled
<b>&amp;Mn</b>	Sets Error Control (ARQ for connection at 1200 bps and higher.		
		&M0	Normal mode, error control disabled
		&M1	Reserved
		&M2	Reserved
		&M3	Reserved
	*	&M4	Normal/ARQ

	&M5	ARQ mode
&Nn	Sets connect speed. If connection cannot be established at this speed, the modem will hang up. Sets ceiling connect speed if &Un is greater than 0 (See &Un).	
*	&N0	Variable Rate
	&N1	300 bps
	&N2	1200 bps
	&N3	2400 bps
	&N4	4800 bps
	&N5	7200 bps
	&N6	9600 bps
	&N7	12,000 bps
	&N8	14,400 bps
	&N9	16,800 bps
	&N10	19,200 bps
	&N11	24,000 bps
	&N12	24,000 bps
	&N13	26,400 bps
	&N14	28,800 bps
	&N15	31,200 bps
	&N16	33,600 bps
&Pn	Sets pulse (rotary) dial make/break ratio.	
*	&P0	U.S.A./Canada ratio; 39%/61%
	&P1	U.K. ratio; 33%/67%
&Rn	Sets Receive Data (RD) hardware flow control, Request to Send (RTS) (See also &In).	
	&R0	Reserved
*	&R1	Modem ignores RTS
	&R2	Received Data to computer
&Sn	Controls Data Set Ready (DSR) operations.	
*	&S0	DSR override; always ON

	&S1	Modem controls DSR
&Tn	Begins test modes	
	&T0	Ends test in progress
	&T1	Analog Loopback
	&T2	Reserved
	&T3	Local Digital Loopback
	&T4	Enables Remote Digital Loopback
	* &T5	Prohibits Remote Digital Loopback
	&T6	Initiates Remote Digital Loopback
	&T7	Remote Digital with self test and error detector
	&T8	Analog Loopback with self test and error detector
&Un	Sets floor connect speed when &Un is greater than 0 (zero). &Nn is the ceiling connect speed (See also &Nn).	
	* &U0	Disabled
	&U1	300 bps
	&U2	1200 bps
	&U3	2400 bps
	&U4	4800 bps
	&U5	7200 bps
	&U6	9600 bps
	&U7	12,000 bps
	&U8	14,400 bps
	&U9	16,800 bps
	&U10	19,200 bps
	&U11	21,600 bps
	&U12	24,000 bps
	&U13	26,400 bps
	&U14	28,800 bps
	&U15	31,200 bps
	&U16	33,600 bps
&Wn	Writes current configuration to NVRAM templates.	

	&W0	Modifies the NVRAM 0 template (Y0).
	&W1	Modifies the NVRAM 1 template (Y1).
&Yn		Sets break handling
	&Y0	Destructive, but doesn't send break.
	* &Y1	Destructive, expedited
	&Y2	Non-destructive, expedited
&Zn=s		Writes phone number <i>s</i> to NVRAM at position <i>n</i> ( $n = 0 - 3$ ).
&Zn=L		Writes the last executed dial string to NVRAM at position <i>n</i> ( $n = 0 - 3$ ).
&Zn?		Displays the phone number stored at position <i>n</i> ( $n = 0 - 3$ ).
&ZL?		Displays the last executed dial string.
+++		Escapes to online Command Mode.

## 6. S-Registers

**Note:** To change a setting, use the `ATSr=n` command, where *r* is the register and *n* is a decimal value from zero to 255 (unless otherwise indicated).

Register	Default	Function
S0	1	Sets the number of rings on which to answer in Auto Answer mode. When set to 0 (zero), Auto Answer is disabled. Auto Answer is also controlled by DIP Switch 5.
S1	0	Counts and stores the number of rings from an incoming call. Register S0 must be greater than 0.
S2	43	Stores the ASCII decimal code for the escape code character. The default character is +. Any value between 128 and 255 will disable the escape code.
S3	13	Stores the ASCII code for the Carriage Return character. Valid range is 0 to 127.
S4	10	Stores the ASCII decimal code for the Line Feed character. Valid range is 0 to 127
S5	8	Stores the ASCII decimal code for the Backspace character. Any value between 128 and 255 will disable the Backspace key's delete function.

S6	2	Sets the number of seconds the modem will wait before dialing. If $X_n$ is set to X2 or X4, S6 determines the timeout length when no dial tone is detected.																		
S7	60	Sets the number of seconds the modem will wait for a carrier. Often used to select a longer duration when the modem is originating an international connection.																		
S8	2	Sets the duration (in seconds) for the Dial command pause option (,).																		
S9	6	Determines the length of time (in tenths of a second) the remote modem's carrier signal must continue in order to be recognized by the RMM.																		
S10	7	<p>Sets the length of time (in tenths of a second) the modem will wait after loss of carrier before hanging up. Allows the modem to distinguish between a line hit (or other momentary break) from a true disconnect (hang up) by the remote modem.</p> <p>Although it is not recommended to connect to a line with call waiting, the S10 register can be adjusted upward to prevent the modem from misinterpreting the second call signal as a remote disconnect. If call waiting is a problem, it is preferable to contact your phone company to determine the command to temporarily disable call waiting (typically *70W). For example: ATDT *70W phone number.</p> <p><b>Note:</b> If S10 = 255, the modem will not hang up when the carrier is lost. Dropping DTR hangs up the modem.</p>																		
S11	70	Sets the duration and spacing (in milliseconds) for tone dialing.																		
S12	50	Sets the duration (in fiftieths of a second) of the guard time for the escape code sequence (+++).																		
S13	0	Bit-mapped register. Select the bit(s) you want ON and set S13 to the total of the values in the Value Column. For example, ATS13=17 enables bit 0 (value is 1) and bit 4 (value is 16).																		
		<table border="1"> <thead> <tr> <th>Bit</th> <th>Value</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> <td>Reset when DTR drops.</td> </tr> <tr> <td>1</td> <td>2</td> <td>Reset non-MNP transmit buffer from 1.5K to 128 bytes*</td> </tr> <tr> <td>2</td> <td>4</td> <td>Set Backspace key to delete.</td> </tr> <tr> <td>3</td> <td>8</td> <td>On DTR signal, autodial the number stored in NVRAM at position 0.</td> </tr> <tr> <td>4</td> <td>16</td> <td>At Power-On/Reset, autodial the number stored in NVRAM at position 0.</td> </tr> </tbody> </table>	Bit	Value	Result	0	1	Reset when DTR drops.	1	2	Reset non-MNP transmit buffer from 1.5K to 128 bytes*	2	4	Set Backspace key to delete.	3	8	On DTR signal, autodial the number stored in NVRAM at position 0.	4	16	At Power-On/Reset, autodial the number stored in NVRAM at position 0.
Bit	Value	Result																		
0	1	Reset when DTR drops.																		
1	2	Reset non-MNP transmit buffer from 1.5K to 128 bytes*																		
2	4	Set Backspace key to delete.																		
3	8	On DTR signal, autodial the number stored in NVRAM at position 0.																		
4	16	At Power-On/Reset, autodial the number stored in NVRAM at position 0.																		

5	32	Reserved
6	64	Reserved
7	128	Disconnect on escape code.

\* The 1.5K-byte non-ARQ buffer allows data transfer with Xmodem and Ymodem type file transfer protocols without using flow control.

The 128 Byte option allows remote users with slower modems to prevent transmitted data from scrolling off screen. When a remote user sends an XOFF (Ctrl-S) to your computer and transmission stops, data in transit from your modem's buffer does not exceed the size of the remote user's screen. This is also helpful when a remote modem/printer application is losing characters.

S14	0	Reserved
S15	0	Bit-mapped register setup. To set the register, see instructions for S13.

Bit	Value	Result
0	1	Disable ARQ/MNP for V.22.
1	2	Disable ARQ/MNP for .22 bis.
2	4	Disable ARQ/MNP for V.32 / V.32bis / V.32terbo.
3	8	Disable MNP handshake.
4	16	Disable MNP level 4.
5	32	Disable MNP level 3.
6	64	MNP incompatibility.
7	128	Disable V.42 operation.

S16	0	Bit-mapped register setup. To set the register, see instructions for S13.
-----	---	---

Bit	Value	Result
0	---	Reserved
1	2	Touch tone dialing test.
2 - 7	---	Reserved

S17	0	Reserved
-----	---	----------



S18	0	Test timer for &Tn loopback testing. Sets the length of time (in seconds) the modem will wait before automatically timing out and terminating the test. When set to 0, the timer is disabled. Valid range is 1 - 255.
S19	0	Sets the duration (in minutes) for the Inactivity Timer. The timer activates when there is no data activity on the phone line. At time out, the modem hangs up. S19 = 0 disables the timer.
S20	0	Reserved
S21	10	Sets the length (in 10 millisecond units) of Breaks sent from the modem to the computer. Applies to MNP or V.42 mode only.
S22	17	Stores the ASCII decimal code for the XON character.
S23	19	Stores the ASCII decimal code for the XOFF character.
S24	0	Reserved
S25	5	Sets the duration (in hundredths of a second) that DTR must be dropped in order to be interpreted as a DTR loss. Allows the modem to differentiate between a random glitch and a true DTR loss.  In most cases, the default value can be used. The S25 register is useful for setting compatibility with older systems running under older operating software.
S26	0	Reserved
S27	0	Bit mapped register setup. To set the register, see the instructions for S13.

Bit	Value	Result
0	1	Enables ITU-T V.21 modulation at 300 bps for overseas calls; in V.21 mode, the modem answers both overseas and domestic (U.S. And Canada) calls, but only originates V.21 calls (Default Bell 103).
1	2	Enables un-encoded (non-trellis coded) modulation in V.32 mode.
2	4	Disables V.32 modulation.
3	8	Disables 2100 Hz answer tone to allow two V.42 modems to connect more quickly.
4	16	Enables V.23 fallback mode.
5	32	Disables V.32 <i>bis</i> mode.
6	64	Reserved

	7	128	Software compatibility code. This setting disables the codes and displays the 9600 code instead. The actual rate of the call can be viewed on the ATI6 screen. Used for unusual software incompatibilities. Some software may not accept 7200, 12000 and 14400 bps or greater result codes.
S28	0	Eliminates the V.32 answer tones for a faster connection.	
	8	Default item, all times are in tenths of a second.	
	255	Disables all connections except V.32 at 9600 bps.	
S29	20	Sets the duration (in tenths of a second) of the V.21 answer mode.	
S30	0	Reserved	
S31	128	Reserved	
S32	2	Bit-mapped register setup for 28.8 modems only. To set the register, see the instructions for S13.	
		<b>Bit</b>	<b>Value</b>
		0	1
		1	2
		3	8
		4	16
		5 - 7	32 - 128
			<b>Result</b>
			Enable V.8 Call Indicate.
			Enable V.8 mode.
			Disable V.34 modulation.
			Disable 33.6 Kbps support.
			Reserved
S33	0	Bit-mapped register setup for 28.8 modems only. To set the register, see the instructions for S13.	
		<b>Bit</b>	<b>Value</b>
		0	1
		1	2
		2	4
		3	8
		4	16
		5	32
		6	64
		7	128
			<b>Result</b>
			Disable 2400 symbol rate.
			Disable 2743 symbol rate.
			Disable 2800 symbol rate.
			Disable 3000 symbol rate.
			Disable 3200 symbol rate.
			Disable 3429 rate.
			Reserved
			Disable shaping.

S34	0	Bit-mapped register setup for 28.8 modems only. To set registers, see instructions for S13.																											
		<table border="1"> <thead> <tr> <th>Bit</th> <th>Value</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>1</td> <td>Disable 8S-2D trellis encoding.</td> </tr> <tr> <td>1</td> <td>2</td> <td>Disable 16S-4D trellis encoding.</td> </tr> <tr> <td>2</td> <td>4</td> <td>Disable 32S-2D trellis encoding.</td> </tr> <tr> <td>3</td> <td>8</td> <td>Disable 64S-4D trellis encoding.</td> </tr> <tr> <td>4</td> <td>16</td> <td>Disable nonlinear coding.</td> </tr> <tr> <td>5</td> <td>32</td> <td>Disable TX level deviation.</td> </tr> <tr> <td>6</td> <td>64</td> <td>Disable Pre-emphasis.</td> </tr> <tr> <td>7</td> <td>128</td> <td>Disable Pre-coding.</td> </tr> </tbody> </table>	Bit	Value	Result	0	1	Disable 8S-2D trellis encoding.	1	2	Disable 16S-4D trellis encoding.	2	4	Disable 32S-2D trellis encoding.	3	8	Disable 64S-4D trellis encoding.	4	16	Disable nonlinear coding.	5	32	Disable TX level deviation.	6	64	Disable Pre-emphasis.	7	128	Disable Pre-coding.
Bit	Value	Result																											
0	1	Disable 8S-2D trellis encoding.																											
1	2	Disable 16S-4D trellis encoding.																											
2	4	Disable 32S-2D trellis encoding.																											
3	8	Disable 64S-4D trellis encoding.																											
4	16	Disable nonlinear coding.																											
5	32	Disable TX level deviation.																											
6	64	Disable Pre-emphasis.																											
7	128	Disable Pre-coding.																											
S35 - S37	---	Reserved																											
S38	0	<p>Sets an optional delay (in seconds) before a forced hang-up and clearing of the Transmit buffer when DTR drops during an ARQ call. This allows time for a remote modem to acknowledge receipt of all transmitted data before it is disconnected.</p> <p>When set at the default (0), the modem immediately hangs up when DTR drops.</p> <p>This option applies only to connections terminated by dropping DTR. If the modem receives the ATH command, it ignores S38 and immediately hangs up.</p>																											

## 7. Specifications

### Compatibility:

**ITU-T V.34+:** 33.6 Kbps

**ITU-T V.34:** 28.8 Kbps

**ITU-T V.32 bis:** 14.4 Kbps

**ITU-T V.32:** 9600 bps

**ITU-T V.22 bis:** 2400 bps

**Bell:** 212 / V.22, 103 / V.21

**Supports:** V.42 / MNP 2-4 Error Control V.42 bis / MNP 5 Data Compression.

**Command Set:** Industry Standard "AT" Commands

**Status/Help:** Status display shows current settings and stored numbers. A Help display summarizes the command set and S-Register functions.

**FCC Reg. No.:** CJEUSA-24375-M5-E

**Ringer Equivalence:** 0.9 B

**Compliance:** FCC Part 68 / Part 15 Class B

**Temperature:** 0 degrees to 50 degrees C (operating)

**Power:**

**AC Model:** 115/230 VAC, 50/60 Hz, 10 Watts (switchable)

**DC Model:** 40 - 60 VDC, 10 Watts Maximum

**Size:** 1.75" x 19.00" x 4.5" (H x W x D)

**Weight:** 4 pounds shipping weight

---

## 8. Customer Service

Customer Service hours are from 8:00 AM to 5:00 PM, PST, Monday through Friday. When calling, please be prepared to give the name and make of the unit, its serial number and a description of its symptoms. If the unit should need to be returned for factory repair it must be accompanied by a Return Authorization number from Customer Service.

WTI Customer Service  
5 Sterling  
Irvine, California 92618

U.S. and Canada: 1-800-854-7226

Phone: 949-586-9950

Fax: 949-583-9514

<http://www.wti.com>

Email: [service@wti.com](mailto:service@wti.com)

---

### Trademark and Copyright Information

WTI and Western Telematic are trademarks of Western Telematic, Inc. All other product names mentioned in this publication are trademarks or registered trademarks of their respective companies.

Information and descriptions contained herein are the property of Western Telematic, Inc. Such information and descriptions may not be copied disseminated or distributed without the express written consent of Western Telematic, Inc.

© Copyright Western Telematic, Inc. 1998  
Printed in the United States of America

January 2000

Part Number: 12548 Revision: F